

Trust in construction projects

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Summary

- Trust is described as an elusive concept (Gambetta 1988), difficult to describe, understand and, therefore, manage. The Trust in Construction project undertook 6 exploratory case studies, of which 4 are presented in this paper, in order to understand how trust is formed, and the impact this has on project performance.
- The authors propose a model of the different forms of trust and the drivers and barriers to its development, derived through the case studies conducted. Through this model different approaches are identified that can either manage trust directly, or mitigate the factors that may cause its breakdown within project teams.
- The research focuses on the role of the commercial manager, the role of procurement mechanisms and the tools that are available to manage issues of project, commercial and relationship uncertainty, such as open book arrangements or partnering workshops, and sees how they can drive the level of trust within the project team.
- Based on both literature and experience of the case studies, the model identifies the risks to the development of trust and how they may be addressed. The paper also presents the trust inventory, developed during the case studies.

Keywords: trust, construction, culture, teams, procurement

Introduction

The Trust in Construction Project is supported by the UK Government through the Engineering and Physical Sciences Research Council (EPSRC). The aim of the project was to engage in an exploratory study, develop a trust measurement tool and investigate the nature of trust within case studies, presented in this paper. The case studies examined trust from a variety of different perspectives in an attempt to assess the inter-relationships between different trust drivers and barriers on different aspects, as well as developing a trust measurement tool or Trust Inventory (Couch and Jones, 1997; Cummings and Bromiley, 1997; Wood et al. 2002). Trust is a complex issue (Gambetta, 1988) that transcends many disciplines (Rousseau et al. 1998), but to effectively manage it, one must first understand its elements (Smyth and Thompson, 1999), processes (Inkpen and Currall, 1998) and the impact of culture

and institutions (Sheppard and Sherman, 1998) on its development. By first constructing a model of how trust is developed within a construction project team, which was developed using the case studies, the authors will highlight “points of intervention”, where trust may be managed or mitigated through the use of tools and mechanisms, such as partnering (Carmichael and Cooper, 1999). The paper also presents the trust inventory, and explains the elements of trust in the light of developed inventory.

WHAT IS TRUST?

Trust has become a key research area within construction management, as well as in the wider business and management literature. It is seen as pervading all elements of the way that we engage with each other. “The importance of trust pervades the most diverse of situations where cooperation is at one and

the same time a vital and fragile commodity.... but this very pervasiveness seems to have generated less analysis than paralysis: in the social sciences the importance of trust is often acknowledged but seldom examined, and scholars tend to mention it in passing, to allude to it as a fundamental ingredient or lubricant, an unavoidable dimension of social interaction, only to move on and deal with less intractable matters.” (Gambetta, 1988).

Gambetta highlights one of the clear difficulties within the area, that is, ‘how do we define trust?’ The literature is varied, reflecting the fact that trust is a crosscutting element of social relations, in both an economic, social and inter-personal context.

For the purposes of starting the project reported here, a working definition of trust was established; “We define trust as a willingness to rely on the actions of others, to be dependent upon them, and thus be vulnerable to their actions. We are mainly interested in trust as it affects the willingness to co-operate” (Wood and McDermott, 1999).

However, during the course of the project the research team drilled down into the issues identified by this definition and unpicked them. In the original working definition there are apparent issues with regard to reliance, risk and uncertainty (Inkpen and Currall, 1998; Wood et al. 2002). There is an element of reliance, an element of goodwill, of vulnerability and an expectation of outcomes.

Trust is a constituent element of a relationship. It provides a context, or pragmatic (Liebenau and Backhouse, 1990), to borrow the terms of semiotics, in which communication can take place. Decisions are made and communications interpreted on the basis of mental models that individuals hold (Piaget, 1961) concerning other individuals (Ring-Smith, 1997). In some respects it may be viewed in a similar way to information or knowledge (Wilson and Kennedy, 1999). Like all mental models the concept of trust should be considered dynamic. It is subject to change during the course of events. A specific event may reinforce or damage the level of trust that is held. These issues are entirely dependent on the strength of the mental model, fragile or resilient, and the nature of the event (Ring-Smith, 1997).

TRUST IN CONSTRUCTION PROJECTS – CASE STUDIES

The Trust in Construction Project undertook six case studies, of which we will consider four here, referred

to as case studies 1, 2, 3, and 4. The reason for not presenting the other two case studies is because both of them were pilot case studies used to validate the methodology for the main case studies (see next sub-section on methodology). The four case studies presented in the next sub-sections will allow us to understand trust elements, processes, and the impact of culture and institutions within an overall project and also within the whole construction industry.

Methodology

The following sub-section outlines the development of the methodology, from the initial pilot case studies to the main case studies. The case study approach has led to the development and use of several research tools to undertake the project. The main case studies are included in the next section.

OVERVIEW OF THE PROCESS

The process was designed as an exploratory case study approach (Yin, 1994). The basic structure of the approach to test these hypotheses, presented in Figure 1, shows the broad overview of how the research was undertaken from a process perspective.

HYPOTHESIS DEVELOPMENT

This process is concerned with the development of the goals of the research, and was based primarily on a literature survey and some initial semi-structured interviews. The hypotheses informed the case study selection criteria and design.

PILOT CASE STUDIES

Two pilot case studies were undertaken. These were done for three main reasons, to:

- Review the data collection approach within a project context;
- Test and develop the Social Network Analysis tool for the Construction Project context; and
- Conduct semi-structured interviews in order to inform the development of a trust inventory.

The case study design was developed from the hypotheses; it was determined as to what data should be gathered and how it should be presented and organised. This phase also led to the development of the case study selection criteria.

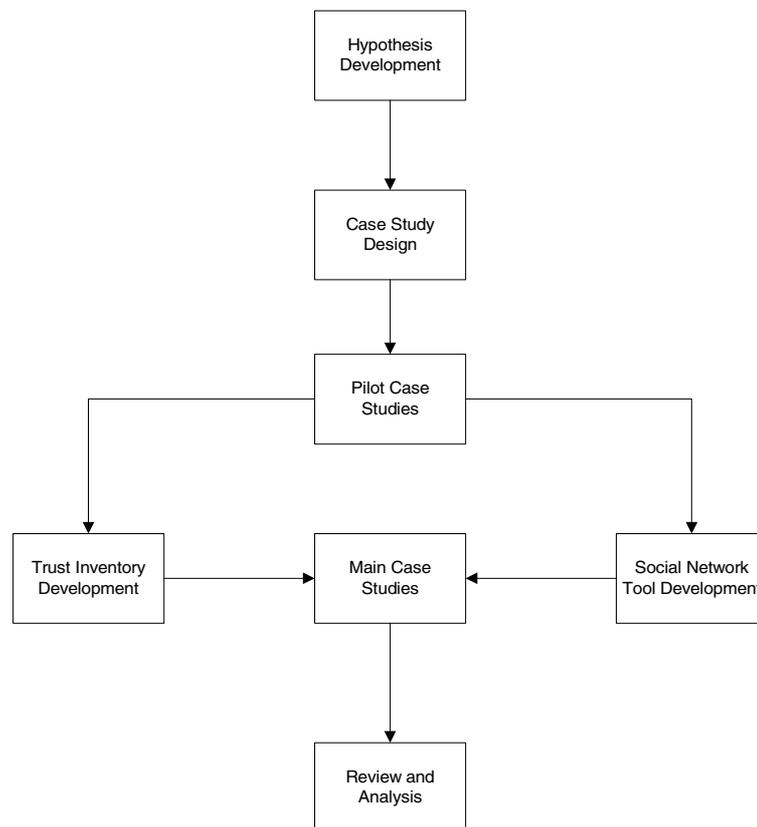


Figure 1: Research Overview

SOCIAL NETWORK ANALYSIS

Social Network Analysis was selected as a method for mapping relationships within the context of a construction project. Although already in existence as a broad approach (Scott, 2000), the method required refining for the construction project context. The details of the analysis are reported elsewhere (Swan et al. 2001).

TRUST INVENTORY

The Trust Inventory was developed in response to an existing Trust Inventory (Cummings and Bromiley, 1997). The purpose of the developed trust inventory was to work in concert with the Social Network Analysis to give various measures of trust within relationships between individuals. Again, this inventory was developed on the basis of semi-structured interviews, through a pilot stage for validation and factor analysis, to the final version that was applied in the main case studies. The details of the inventory are reported elsewhere (Swan et al. 2002)

Main Case Studies

The main case studies were undertaken using the developed tools, plus additional information gathered within the case study methodology. The findings from the case studies are held to be representative of the construction industry due to the varying size and value of the projects studied: thus generalizable.

CASE STUDY 1 – LARGE SCALE INFRASTRUCTURE PROJECT

The project was valued at £37m and was 18 months in duration when the project was studied in month 15 of its development. The initial budget cost was £18m; the growth of budget due to the change of the scope of the works. The timeline for the project was unaffected as the client was very specific with regards to the completion date. This was due to the high levels of capital investment and the requirement to generate an income stream as soon as possible from the project. The project team included many personnel that had worked on a “world-class” retail development in the

same region, as the developer had expressed a preference to work with the same groups of contractors and consultants from the previous project.

“We have a “knot” of contractors that know what we expect and how we expect to develop the relationship with the end users.” (Contracts Manager of the Client Organisation)

Many of the individuals within the construction team were attached to the earlier retail development. This project was valued at £300m and used the same main contractor, architects and structural engineers. There was some retention of key individuals, especially with the architect. The main change was by the contractor who introduced a new project manager to the site. One of the main factors for the selection of the specific team was an attempt to recreate the successful team that had delivered the previous development and thereby transfer learning to the new project. Moreover, the client considered the potential learning between teams would be beneficial.

KEY ISSUES

The level of complexity had been determined as high by the individuals involved in this project. There was a high level of informational complexity due to the large amount of information flowing between partners. Project management issues were further complicated due to issues of operating within a live environment. The participants, due to the large number of work packages and specialist contractors, also considered organisational complexity to be high.

Uncertainty was considered to be high in the project due to the use of concurrent design and construction, leading to a high number of design changes that created issues of dependency of tasks and rework. The project was undertaken using management contracting with the contractor and consultant teams having a direct link to the client, and the contractor managing the works through sub-contractors. These works packages were let through the main contractor using standard sub-contracts with terms defined by the contractor.

Strong messages from the client were reiterated by the commercial managers for all organisations involved within the project. This meant that activity at the site level was aligned to the values of teamwork and flexibility required by the client, therefore, the project delivery team had very clear goals. The client had determined the team approach, replicated from previous projects. The design team was geared towards comm-

-unicating with the key client representative and addressing their needs. The client felt very strongly about this approach.

CASE STUDY 2 – RECONSTRUCTION OF COASTAL DEFENCES

This project was valued at approximately £10m and was undertaken over 80 weeks. The initial budget cost for the job was approximately £9m but had been revised to include changes to concrete quality and value engineered, which removed about £500,000 from the final cost. This cost was set approximately 1/3 of the way through the construction phase of the project. It should be noted that the final account was settled nearly 7 months prior to the completion of the project. 14 weeks were added to the project duration due to client changes while the project was delivered against delivery date of the finalised programme. This meant that, in real terms, the project was delivered 14 weeks early.

KEY ISSUES

The main complexity issue was designing working patterns determined by the tides; this issue proved key to timely delivery of the project. The project itself was considered to have low to medium complexity by both the client and the main contractor. The commercial managers and directors solved problems at the highest level. The commercial managers were central to the management of conflict which resolved the issues. When the contract was awarded, the contractor highlighted under-measurement issues by the client, and at the time of interview cases were being prepared for adjudication. At this point the Regional Commercial Director proposed a solution to the problem; this proposed solution raised several trust issues which will be dealt with separately within this section.

The proposed solution was to generate a new bill of quantities for the project and so derive a new price. This was then converted to a Guaranteed Maximum Price (GMP) agreement, which reflected the original scope of works, while additional items would still be added to the price of the contract. The client then settled the account 7 months prior to practical completion. This was unusual for the contractor who stated that normal settlement periods averaged 6-9 months after the completion of the contract. The client stated that the problem was solved and the adjudication information both parties had selected was used to solve the problem

to their mutual satisfaction.

Additionally, it was recognised that the contractual arrangements were creating a problem for the client. The contractor and client at commercial manager level resolved to change from a traditional contract to a partnering GMP form in order to resolve potential conflict. This was undertaken with the support of the directors, and could not have been the responsibility of site personnel. Further, the contractor's commercial managers and directors took a unambiguous stance that the project should be non-confrontational – this message was strongly filtered to site staff and proved effective.

CASE STUDY 3 – SCHOOL PROJECT

The project was valued at approximately £1.2m and was 40 weeks in construction. There was a long period prior to the development of the project, while the Council team addressed planning and environmental issues. The school would be delivered to the LEA (local education authority) as a “ready to use” establishment, with the contractor taking responsibility for the internal fittings, such as IT, the kitchens and furniture. The contractor also assisted with the organisational issues of moving the old school into the new facility. The contractor's commercial manager was central to the management of the project. The project, at the time of data collection, was at the design and construction phase.

KEY ISSUES

The project was undertaken as one of two schools within a single partnering project. There had been considerable delays at both sites due to environmental and site constraints. This caused the job to be delayed by several months. The construction of the school represented low complexity from a technical perspective. There were only a few key sub-contractors. The relationship uncertainty within the supply chain was also low, however, the client and contractor had never worked together before and this means their relationship uncertainty was high. The partnering process was an attempt to mitigate this relationship uncertainty. The commercial manager of the contractor played a vital role in developing and managing the strong relationships with both the client and the rest of the supply chain.

While this was the first job that the contractor has undertaken for the client, the contractor had a pre-assembled supply chain of key sub-contractors that they had used for jobs of this type. Further, there was a clear understanding between the participants with regards to

the “open” partnering approach. The contractor and their supply chain were familiar with the partnering approach. “We believe partnering is the way we want to do business. It may cost more but it reduces risk and creates sustainable business.” (Commercial manager of the contractor)

All the participants felt this approach was key. The client organisations had the authority to adopt this approach and all the key members of the network were willing to engage in the processes. The project team had engaged in a long set up period, partially imposed by site issues. This allowed the team time to build relationships and was stated by all involved in the process as a positive and useful experience. The individuals involved in undertaking the works were included in the partnering process from a very early stage, and were encouraged by the commercial managers to work in a way that supported the organisation's partnering philosophy.

The project operated on an open book account; this meant there was transparency of finance. The client representative from the LEA stated that this was the best financial reporting they had experienced on a project and that this approach engendered trust between the parties.

The project was delivered on time and to budget. The technical services project manager stated that he was very happy with the quality and the implementation process was a positive experience, while the end users stated that their strategic brief had been met. These issues had a strong impact on the levels of trust at the data collection stage. The client also appreciated the role played by the commercial managers of the companies involved during the difficult times when the conflict arose because of the innovative design and related higher cost per floor area.

CASE STUDY 4 – ROAD DEVELOPMENT PROJECT

The project was valued at £2m and was 32 weeks in construction. The project was in the first weeks of construction when the research began. After the final stage of data collection 8 weeks remained of the project.

KEY ISSUES

The level of complexity has been determined as low as there were a low number of key sub-contractors. The organisational complexity was also considered to be low,

with many of the key decisions makers having direct access to site meetings including the commercial managers of all the companies involved. The relationship uncertainty, however, was high, with this job representing the first time that the two main organisations, the contractor and the client, had worked together. Many of the sub-contractors were also new to the contractor and the client. However, for this project it was determined that the perspective taken would be for the commercial managers to develop the key relationships between the main contractor and the client, in order to develop a more focussed view of site relationships.

The two teams were from identifiably different approaches to construction. The contractor felt they were strongly aligned with Rethinking Construction (Egan, 1998) and was comfortable with tools and techniques of negotiated work. They stated that they sought to gain commercial benefit from the flexibility of these approaches.

Alternatively, the client team stated that they were more comfortable with traditional procurement approaches. They were familiar with the issues yet they stated they felt they were not entirely able to implement the ideas due to institutional constraints.

There was a failure to recognise differing values at commercial manager level. Both commercial managers had differing approaches; traditional versus relational. This created further problems on site.

It was accepted, by both the client and the contractor that the tendered price was insufficient to do the works specified. This created a negative spiral between the two parties. The client accepted that the contractor was not performing "on a level playing field" and that many

of the perceived problems were a product of the financial position of the project.

One of the reasons for this was the inability of the commercial managers to resolve the financial issues. This was based partially on a lack of willingness to align approaches between the contractor and client, and options to resolve problems were not taken. The other reason was that the client stated a traditional distrust of contractors; this created a climate of conflict. There were low levels of trust between the contractor and client, although the client favoured the contractor more.

Relationships at the senior level were stated to be good. The key project relationship was between the contractor's contracts manager and the technical services manager. There was some feeling between both parties that this was not translated to site. The Contractor's Regional Commercial Director stated that they were requiring the site teams to work in a different way, but the site teams were unable to translate this into working practice. The efforts were a complete failure to align goals between the teams.

Elements of Trust

During the course of the Trust in Construction project a tool, or Trust Inventory (Couch and Jones, 1997; Cummings and Bromiley, 1997), was developed to measure trust in relationships (Swan et al. 2001). Further, through the use of a semi-structured 'interview guide', 32 interviews were conducted and elements of trust identified. In table 1, the figure in brackets indicates the number of times a specific word was mentioned during these interviews.

These elements were then compiled into a question-

Table 1: Content Analysis of Trust Interviews

<i>Category</i>	<i>EXAMPLE VOCABULARY</i>
Trust (654)	Trust/trusted/trustworthiness (577), mistrust/untrustworthy (24), betray trust (17)
Relationships (124)	Partnering/relating/friendship (57), support/co-operation (26)
Value (76)	Value (76)
Confidence (51)	Confidence (33), faith (18)
Competence (28)	Competence (28)
Professional (21)	Professional (20), unprofessional (1)
Promise keeping (149)	Promise/promise keeping (42), delivery (74), reliability (27)
Fairness/Reasonableness (110)	Fairness (58), Unfairness (16), Reasonable (28)
Mutuality/Reciprocity (97)	Mutuality (39), reciprocity (14), expectations/obligations/duty (32)
Honesty/integrity (94)	Honesty (51), integrity (13), truth (16)
Openness/communications (82)	Communications (42), openness/frankness (40)
Values/ethics (72)	Values (39), ethics/morals (19)
Reputation (70)	Reputations (44), respect/valued (26)
Blame culture (21)	Blame culture (21)

-naire comprising 53 items; this was tested using a pilot sample of 187 practitioners. Factor analysis identified 4 separate but related factors: relationship, communication, commitment and reliability. We hold that these factors are not limited to the construction industry; they are generic and applicable to other industries. These factors are now discussed in the following sub-sections:

RELATIONSHIP

Relationship is concerned with the perception of an individual's values and motivations. Within this category a number of separate issues are addressed; they have been collected together as they are concerned with perception of the relationship a specific individual has of another with regard to their values, rather than direct communication, such as, action or commitment to broader shared goals in respect to the network. This may be viewed as trust based on identification with the trustee (Doney et al. 1998). A key element of this is how individuals have shared values with regard to treating one another, which is seen as a key determinant of a success in attaining network goals, particularly, with respect to building effective teams (Morgan and Hunt, 1994; Bresnan, 1996). Hertz (Hertz, 1992) notes that shared norms and values are "... the basis of trust in networks". This issue of 'organisational fit' is seen as a key driver in the early stages of a relationship, "...organizational similarities between partners help establish trust and enhance the appropriability of knowledge necessary to form the basis of a common frame of reference." (Inkpen and Currall, 1998)

Another stance, however, is that although shared values are important, it is the understanding and accommodation of differing values that may make a successful project team (Uher, 1999). Values and norms are, according to Checkland and Scholes (1992), central to any social system; they are implicit behaviours and rules that social groups operate by. While the construction industry as a whole can be perceived to have a specific culture (Barlow, 1996; Liu and Fellows, 1999), organisations themselves also have specific sets of rules and norms (Bresnan, 1996; Nonaka and Konno, 1998) in which exchange activity takes place. In addition to this, individuals themselves will establish rules and norms from the many other different social settings that they may participate within, as well as those emanating from their individual psychological make-up (Roy and Dugal, 1998). The interview stage of the research project determined that the issue of shared values rather

than appreciated differences was important, so this approach was taken as a measure of the level of trust.

Blois (1998) highlights goodwill as a key driver of trust: the issue of trust appears to be more than just a fulfilment of action against an agreed set of specified criteria. Goodwill indicates that the trusted party is willing to go beyond the act of being reliable and looks towards the well being of the trusting party, an element of trust that is developed through experiential learning (Warwick Manufacturing Group, 1999). This is related to the perceived intentionality of goodwill on the part of the 'trustor' (Doney et al. 1998). Reciprocity was also stated during the interview as an important area of trust and trust building. The act of give and take is essential in trust building (Tyler and Kramer, 1996), while reciprocity highlights the issue of the dynamic nature of trust (Hatush and Skitmore, 1997). Furthermore, it is subject to processes, although often tacit, that cause it to increase or decrease. It is held that in stable trusting relationships reciprocity may be viewed in a balanced way by trusting parties (Brower et al. 2000).

Fairness (Smyth and Thompson, 1999) was also shown to be a vital part of the relationship (Swan et al. 2002). It was important for individuals to perceive that the person they were working with would be fair in the face of uncertainty (Smyth and Thompson, 1999). The concept of the fairness is closely linked to the issue of shared values as to what "being fair" actually consists of. This view of justice is a central process in building trust (Mishra and Spreitzer, 1998). What all these elements points towards is an expectation of behaviours with regards to how individuals treat one another, the ethical framework in which they operate (Bejou et al. 1998; Wood et al. 2002). These rules of engagement were common and can be seen as powerful elements of trusting relationships.

COMMUNICATION

This factor is concerned with the characteristics of transmitted communications. This essentially addresses the mode and nature of communication. Within this section four key issues are identified: honesty, timeliness, integrity and openness. Although these reflect values that the individual may hold, the nature of their communication is an explicit representation of this. Interviewees noted that any positive communication could be viewed as a trust building exercise, often making reference to a "trust bank" or store of trust.

Honesty and integrity of communications can be addressed together as they are closely related concepts

(Smyth and Thompson, 1999). Honesty is concerned with the accurate passing of information and the clear interpretation of facts (Cummings and Bromiley, 1997). In construction, for example, project teams rely on group members to communicate information in an honest fashion, as the production/implementation system requires accurate information to respond effectively. The interconnectedness of multiple actors in a construction environment means inaccurate information and the impact this has on future action can create difficulties. Walker and Hampson (2003) highlighted the issue of honesty and how it interconnects with issues of trust. "Issues of trust and commitment [are important] because it involve teams and individuals feeling safe in measuring performance to learn from their experience. This requires openness and honesty rather than recording idealized or false performance records in order to hide mistakes or to attempt to extract unwarranted credit." (Walker and Hampson, 2003)

Openness is closely related to honesty; it is essentially concerned with honesty of omission of information for benefit. Honesty could be considered to be concerned with acts of deliberate lying.

COMMITMENT

Commitment is seen as a fundamental element of the trusting team (Morgan and Hunt, 1994) and can be viewed as the adherence to a shared set of external goals and values (Walker and Hampson, 2003). The issue of commitment requires a principle to commit, the generation of which may be seen as the main role of leadership (Webber, 2002). This working description of commitment allows us to define it within the context of the Trust Inventory (Wood et al. 2002), which is commitment to the shared goals and values of the project. Within many groups these are arrived at through a process of continuous exchange (Weick, 1995; Checkland and Holwell, 1997; Walker and Hampson, 2003), or an autopeotic generation of shared meaning (Vicari and Troilo, 1998). This assumes that shared meaning is generated by constant exchange in which the goals of the group emerge. It is these goals that create high performing project teams (Viall, 1996). Within the research project it was stated as a proposition that trust could be managed through 'interventions'.

These interventions seek to identify mutual objectives (Barlow and Cohen, 1996) and to make them explicit (Carmichael and Cooper, 1999). Tools can then be used to re-iterate and support the development of trust (Swan et al. 2002). However, this does not discount the role

of experiential development of mutual goals and undertaking of the project processes in a more traditional way (Swan et al. 2002). What is important is that these goals are communicated and shared as a 'project culture' to ensure that individuals can commit. Without them they may commit to any number of organisational and individual values (Lok and Crawford, 1999) rather than working towards the development of a 'mutual partnering culture' (Carmichael and Cooper, 1999). It is held that where there is an absence of commitment team members will seek to comply with, rather than commit to, the goals of the project (Walker and Hampson, 2003).

RELIABILITY

Reliability on its own could be considered sufficient to give the appearance of trust. Reliability means that an individual has positioned themselves against an expected outcome, but can trust be considered to run deeper? Blois (1999) determines that trust is not about reliability alone, as the mere act of being reliable does not have the underlying intentionality (Palmer, 1969; Ricoeur, 1991) of goodwill that trust requires.

It is apparent, from the literature and the interview data that, reliability forms a key element of a trusting relationship (Svensson 2001; Swan et al. 2002). Without the underlying understanding that individuals will deliver what they need to and when they need to, then the trusting individual is taking a high level of personal risk which is central to building trust (Doney et al. 1998). This can be seen to have two elements of trusting, the first is the predictive element of trust, based on past behaviours, and the second, closely related, based on perceived capability (Doney et al. 1998).

Layers of context for Trust Development

Trust is developed at many levels (Rousseau et al. 1998), from societal to industrial, organizational, project and inter-personal. The Trust in Construction Project investigated the development of inter-personal trust (Oskamp 1987) between key team members, but contextual data and other studies showed that there were a variety of contexts that impacted the level of trust in the inter-personal context. A model of these contexts is shown in Figure 2.

The model should not be considered mechanistic; the inter-relationship between these different contexts is often complex. Issues of industry structure, organizational values or project issues can all influen-

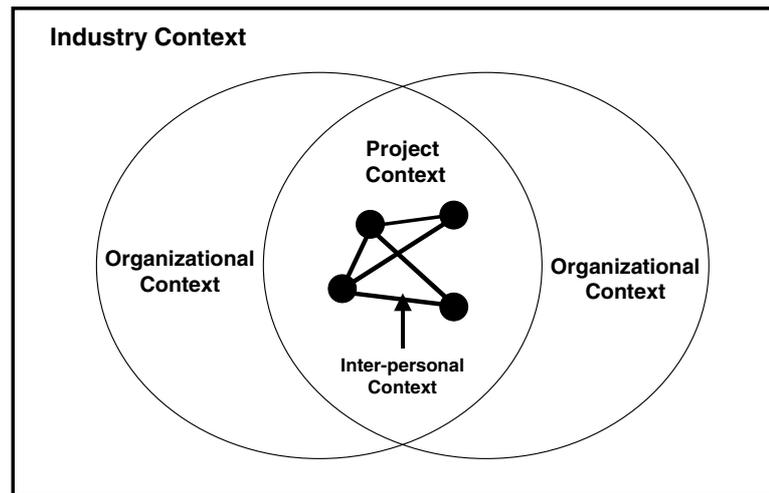


Figure 2: Layers of Context for Trust Development

-ce the behaviours that lead to the development of trust in inter-personal project relationships.

When we are attempting to intervene in the development of trust; what are we trying to do?

- Directly manage the relationships.
- Manage the context that the relationships are in.
- Manage issues that are directly impacting trust.
- Mitigating the potential for future conflict.

Trust and the Construction Industry

It is often posited that the structure of the industry, both from demand and supply perspectives can drive adversarial relationships within the construction industry (Shove, 1996; Cox and Townsend, 1998). The fragmentation of the industry, driven by inconsistent demand has created the disparate supply chains that are highlighted as a problem in developing trust (Comptroller and Auditor General, 2001).

If we see the one of the key problems as driven by the variability of demand and supply relationships, then some attempt at stabilising these, within a limited context may lead to more integrated supply chains. How we do this depends on the role of the active participant (New, 1997). At the policy level, for public bodies we can see attempts at stabilising the procurement relationships through procurement guidelines (Government's Construction Clients Panel, 1999). This initiative has given public bodies the drivers to move away from competitive tendering to more stable procurement relationships leading to less adversarial projects (Erridge and Greer, 2002).

From a contractor perspective, trust may be built

through the use of integrated supply chains. In the cases observed, two contractors had built supply chains of main sub-contractors to address specific types of project, retail and schools. This approach was seen to create high levels of trust within the site teams. Both contractors attempted to keep their supply chain informed about demand flows, with the retail contractor directly managing the flows of work through a well developed supply chain policy. These approaches are driven by government or clients with a large amount of power and a regular flow of work, but can be seen to be effective in the management of demand uncertainty, which has a direct impact on how supply chains will organise themselves.

Organizational Trust Issues

Organizations have a culture (Liu and Fellows, 1999). Organizations will have a set of shared values and norms (Nonaka and Konno, 1998) which are the basis for collective action. There may be a number of differing cultures and sub-cultures interacting (Lok and Crawford, 1999) that determine whether an organization is trusting or not. Intervening in cultural change is a complex issue (Bresnan, 1996).

The trust context within an organisation can have an impact on its ability to engage in a trusting way with partners. The organizational trust context is driven by the norms and values of the organization. Trusting organizations are those that trust their own staff (Tschannen-Moran, 2001), supporting a no-blame culture (Woodward and Woodward, 2001). Individuals within these types of organization have the authority to

act and respond flexibly to partners in the project context, key issues for the development of trust (Black et al. 2000). Although important in the issues of intervening in project teams, interventions to change organizational trust context are not covered here.

Trust and Project Issues

Trust in project teams requires the conjoining of organisational cultures (Cox and Townsend, 1998). This was shown starkly in two specific cases. In the development of a school project, the main contractor and the client used similar language to describe their approach to construction projects, citing *Rethinking Construction* (Egan, 1998) as the basis for the approach to the project, and embracing partnering. In another case the client and contractor identified themselves at odds in their approach. The client felt that traditional approaches were preferred, while the contractor sought less traditional approaches to the project; a difference that created conflict on site. The conjoining of cultures (Inkpen and Currall, 1998) is often driven by good relationships at the strategic level (Allen and Cooper, 1999), with a close correlation in all the cases between levels of trust at the strategic level and inter-organisational trust as a whole.

Partnering can be viewed as a number of different tools that may, or may not be used (Bresnan and Marshall, 2002). The partnering approach can drive these two issues. Mechanisms such as workshops make the core values of the project explicit (Barlow and Cohen, 1996). Involvement of strategic personnel in these activities ensures that there is internal sanction for working in new ways. The partnering approach acts on the norms and values of the new project organisation, as well as addressing issues of relationship uncertainty.

The issue of mutual objectives is important to the project (Carmichael and Cooper, 1999). By addressing the individual, organisational and project goals in an open manner, the problems of differing expectations and requirements of a project is also addressed. This can be managed in the opening workshop phase and supported through the use of shared performance objectives (Office of Government Commerce, 2003). By clarifying objectives and expectations a potential conflict can be mitigated and damage to trust avoided.

Trust and money are inextricably linked (Latham, 1993). Although the value of the project in relation to the finances available (Cox and Townsend, 1998) was seen as important by all parties in the cases, issues of certainty and transparency served to mitigate some of

the issues. The conversion to a guaranteed maximum price in one case addressed a central concern of the client, feeding into the behaviour on the site where staff were described as “managing the project rather than the contract”. In another case, where it was clear that the funding available was insufficient to deliver the project to the required quality, the client and contractor became entrenched in their expectations of the other behaviour. However, the limitations of the budget were managed out of another case through the use of open book. This transparency in the cost issues allowed the partners to address the uncertainty issues by developing joint solutions to budgetary constraints.

Interpersonal Trust

Interpersonal trust is trust that occurs between two individuals. This has been extensively studied in a variety of contexts; psychological (Roy and Dugal, 1998), economic (Wilson and Kennedy, 1999), social (Fukayama, 1995), and managerial (McKnight et al. 1998).

Interpersonal trust was measured in the Trust in Construction project using the Trust Inventory, the elements and factors of which are highlighted in (Wood et al. 2002)). Inter-personal trust between individual can be seen to start from two aspects of trust; global trust (Couch and Jones, 1997), which may be considered an individual’s propensity to trust generated from a wide variety of factors, and emotive trust (Doney et al. 1998), which is an individuals non-cognitive assessment of another individual on initial meeting.

The Trust in Construction project highlighted the importance of key relationships to the success of a project. Team building (Carmichael and Cooper, 1999) can be seen as one way of addressing this problem. This creates a safe non-project context for individuals to gain experience of one another. The cases showed good examples of key individuals interacting well to generate good project performance. Also, in one case a client asked for the removal of an individual that they felt was not “working well with the team”.

Resilience of Trust

If we consider trust as a mental model one individual has about another, then these mental models will be subject to a certain amount of resilience (Ring-Smith, 1997). This means that attempts to manage them will be acting against models that may be more or less

subject to change. Trust is built through experience and exchange (Jones and George, 1998; Swan et al. 2001). The greater the experience the more resilient the trust model will be. This raises two issues for intervening. The first is that it is better to engage in positive trust building activities early in the process, while the models are weak. The second, illustrated by one of the cases, is that often extreme conflict potential that is well managed could be considered one of the strongest types of trust intervention, as issues of risk, uncertainty and vulnerability are brought to the surface.

One of the questions raised from the Trust in Construction project is the issue of the impact of the different managed and unmanaged trust events. One conclusion that could be drawn is that while trust is undeveloped, interventions may not require to be high impact, however in the face of well developed negative models more extreme action may be required.

Conclusions

It is evident from the above presented case studies and further discussion that the management of trust within project team relationships needs to be considered from a more holistic perspective. Relationships that may otherwise be positive may be hamstrung by institutional, organisational or project factors that will force individuals into taking untrusting positions. It is difficult to ask individuals to behave in a trusting way when the procurement framework or organisational culture means that individual will be exposing himself or herself to excessive personal risk. In one case an intervention was designed to address issues of procurement that had created conflict. However, an unwillingness to adopt the solutions meant the barriers to building trust remained, and the climate on the project was worsened. The intervention acted on the barriers to building trust, rather than attempting to address the contexts that the relationships were in. The tools provided by partnering allow potential conflicts to be mitigated through tools such as guaranteed maximum price, open book and dispute resolution, but without the change of organizational and project context for trust they cannot work. The willingness to change the pattern of work must be addressed before such tools can be effectively applied. The best way to build trust is to be trusting to individuals (Blois, 1999), the reciprocal exchange of positive trusting behaviour through project participation will ultimately drive trust (Swan et al. 2002). The key role of interventions should be to create the contexts and to remove the barriers to support this process.

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